IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION

CHEETAH OMNI, LLC,	§	
	§	
Plaintiff,	§	
	§	
vs.	§	**CIVIL ACTION No. 6:09cv260**
	§	
VERIZON SERVICES CORP., et al.	§	
	§	
Defendants.	§	

MEMORANDUM OPINION & ORDER

This claim construction opinion construes the disputed terms in U.S. Patent Nos. 7,145,704 ("the '704 Patent") and 7,522,836 ("the '836 Patent"). Plaintiff Cheetah Omni, LLC ("Plaintiff") alleges Verizon Services Corp., Verizon Business Network Services, Inc., and Verizon Enterprise Delivery LLC[1] (collectively "Defendant") infringe the '704 and '836 patents. The parties have presented their claim construction positions (Doc. Nos. 109, "PL.'S BR." 113, "DEF.'S RESP.," 115, "PL.'S REPLY"). On September 9, 2010, the Court held a claim construction hearing and heard further argument (Doc. No. 117). The Court issued a provisional claim construction order on October 15, 2010. (Doc. No.124). For the reasons stated herein, the Court adopts the constructions set forth below.

CLAIM CONSTRUCTION PRINCIPLES

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312

[1] Defendant Grande Communications Networks, Inc. settled earlier in the litigation. *See* (Doc. No. 111).

(Fed. Cir. 2005) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313-1314; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification and the prosecution history. *Phillips*, 415 F.3d at 1312-13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312-13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Id.* (quoting *Vitronics Corp.v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex. Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys.*,

Inc. v. Advanced Cardiovascular Sys., Inc., 242 F.3d 1337, 1343-44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. EchoStar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004).

The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex, Inc.*, 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct." *Globetrotter Software, Inc. v. Elam Computer Group Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics Corp.*, 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *see also Phillips*, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patentee may define a term during prosecution of the patent. *Home Diagnostics Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) ("As in the case of the specification, a patent applicant may define a term in prosecuting a patent"). The well established doctrine of prosecution disclaimer "preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution." *Omega Eng'g Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). The prosecution history must show that the patentee clearly and unambiguously disclaimed or disavowed the proposed interpretation during prosecution to obtain claim allowance. *Middleton Inc. v. 3M Co.*, 311 F.3d 1384, 1388 (Fed. Cir. 2002). "Indeed, by distinguishing the claimed

invention over the prior art, an applicant is indicating what the claims do not cover." *Spectrum Int'l v. Sterilite Corp.*, 164 F.3d 1372, 1378-79 (Fed. Cir. 1988) (quotation omitted). "As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public's reliance on definitive statements made during prosecution." *Omega Eng'g, Inc.*, 334 F.3d at 1324.

Although, "less significant than the intrinsic record in determining the legally operative meaning of claim language," the Court may rely on extrinsic evidence to "shed useful light on the relevant art." *Phillips*, 415 F.3d at 1317 (quotation omitted). Technical dictionaries and treatises may help the Court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but such sources may also provide overly broad definitions or may not be indicative of how terms are used in the patent. *Id.* at 1318. Similarly, expert testimony may aid the Court in determining the particular meaning of a term in the pertinent field, but "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful." *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

DISCUSSION

A. Overview of Patents-in-Suit

The '836 is a continuation of the '704, thus the patents are identical except for the claims themselves. The '704 and '836 ("patents-in-suit") are continuations-in-part of U.S. Patent Application 10/723,107, filed on November 25, 2003, now U.S. Patent No. 6,943,925. The patents-in-suit relate to "a system and method capable of using an optical router having one or more all-optical logic gates." '704 Patent at 1:21-23. Plaintiff has asserted claims 4, 7 and 8 of the '704

patent and claims 1, 4-9, 11-16 and 18-20 of the '836 patent against Defendant. The asserted claims cover optical processing systems and methods for communicating information over a network. Specifically, the inventions of the patents are directed at a optical processing system consisting of, among other things, "[a] switching element capable of being used in an optical processing device." *Id.* at Abstract.

B. Packet-Based Switching

Defendant's primary position appears to be that the claimed systems in the patents-in-suit are limited to "packet-switching." DEF.'S RESP. at 2-6.[2] Many of Defendant's constructions also require that the format of the optical signals be limited to "packets." *Id.* The patents-in-suit are not so limited.

The specifications of the patents-in-suit include a "Summary of Example Embodiments." '704 Patent at 1:41-3:2. The disclosed embodiments do not limit the claimed system to a particular type of routing, switching or format. For example, one exemplary embodiment describes components of the claimed switching element with no mention of packets or packet-switching. *Id.* at 2:3-15. Another embodiment describes the optical switching system containing a "fiber optic tap operable to receive an optical signal having at least one packet label and packet data." *Id.* at 2:26-42. Accordingly, the patents provide embodiments that merely describe the physical switching structure of the system. Other embodiments recite the switching structure configured for sending and receiving packet formatted data. The patents-in-suit, therefore, are not limited to packet-based switching, but merely provide embodiments that may be configured to handle such data.

[2] Packet-switched routers send packets through a network. Packets may include a header and payload. The header will contain the packet's destination address and the payload will contain the actual data transmitted.

Defendant has not provided citations from the specification or prosecution history which demonstrate clear disavowal of non-packetized data transmission. Defendant's specification citations are almost exclusively to preferred embodiments. Importing those embodiments into the claims would be improper. *Phillips*, 415 F.3d at 1323. Additionally, the claims themselves are directed at the hardware for an optical switch and the specification does not provide strong support to limit the claims to packet-based technology. In fact, the specification expressly states that while optical signals may be transmitted in packet format, they can also be transmitted as "voice data, video data, or any other data type and/or data format." *Id.* at 25:2-5.[3]

C. Disputed Terms

Term	**Plaintiff's Proposed Construction**	**Defendant's Proposed Construction**
optical processing system [‘704, cl. 4, 7, 8 **‘836, cl.** 1, 4-8, 15-16, 18-20**]** **A method of processing optical signals [‘836, cl.** 9**]**	The system is defined in the claim (*i.e.* no construction necessary)	A system for processing optical packets while keeping the payload of each packet in the optical domain (for claim 4 of the ‘704 patent and it's dependent claims; for claims 1 and 15 of the ‘836 patent and their dependent claims). Processing optical packets while keeping the payload of each packet in the optical domain (for claim 9 of the ‘836 patent and its dependent claims)

The parties dispute whether these terms, which appear only in claim preambles, are

[3] "Wavelength channels 1705 can comprise, for example, Internet Protocol (IP) packets, voice data, video data, or any other type of data type and/or data format" ‘704 Patent at 25:2-5.

limitations. PL.'S BR. at 8. Defendant contends that the terms clarify that the patents-in-suit specifically claim an "optical processing system" as opposed to a generic "processing system." DEF.'S RESP. at 10. Defendant further asserts that the term "optical" in the preamble confirms that the "packet payloads" are not subject to optical-to-electrical-to-optical conversion ("OEO") and remain in the optical domain during transmission. *Id.* at 10-11. Plaintiff contends that the preamble phrase is not limiting and does not need to be construed. PL.'S REPLY at 4.

"[A] preamble is not limiting 'where a patentee defines a structurally complete invention in the claim body and used the preamble only to state a purpose or intended use for the invention.'" *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (citing *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997)). However, the preamble is "given the effect of a limitation" when it is "considered necessary to give life, meaning, and vitality to the claims." *Kropa v. Robie*, 187 F.2d 150, 152 (C.C.P.A. 1951). Additionally, the preamble may be limiting where "a particular disputed preamble phrase" provides the antecedent basis for claim elements. *Catalina*, 289 F.3d at 808. "Likewise, when the preamble is essential to understand limitations or terms in the claim body, the preamble limits claim scope." *Id.* Finally, the preamble is limiting when relied upon "during prosecution to distinguish the claimed invention from the prior art." *Id.* "Without such reliance . . . a preamble generally is not limiting when the claim body describes a structurally complete invention." *Id.* at 809.

The claims of the patents-in-suit describe a structurally complete invention. The preamble phrases do not provide an antecedent basis for any element nor do they introduce necessary structure into the claim.[4]

[4] Even if the preamble were limiting, Defendant's attempt to limit the term to packet-based switching would be incorrect. *See supra* SECTION B.

In Claim 4 of the '704 Patent, which is exemplary for the purpose of resolving this dispute, the allegedly limiting phrase is "optical processing system." The claim recites:

> **4**. An optical processing system comprising:
> an input interface comprising at least a first wavelength division demultiplexer and one or more light sources coupled to the first wavelength division demultiplexer and capable of generating a multiple wavelength optical signal;
> a switching element coupled to the input interface, wherein the switching element comprises:
> an optical signal separator operable to separate the multiple wavelength optical signal into one or more optical signal wavelengths;
> a plurality of semiconductor devices located on a single semiconductor substrate, the plurality of semiconductor devices capable of performing an optical switching operation on at least one of the optical signal wavelengths; and
> a controller operable to generate a control signal that affects the optical switching operation performed by one or more of the plurality of semiconductor devices; and
> a node coupled to at least a portion of the switching element, wherein the node comprises a second wavelength division demultiplexer and a receiver coupled to the second wavelength division demultiplexer that is capable of detecting at least a portion of the one or more optical signal wavelengths.

'704 Patent at 46:4-30. In other words, Claim 4 claims an "optical processing system" (*Id.* at 46:4) comprising: (1) "an input interface" (*Id.* at 46:5-9); (2) "a switching element" (*Id.* at 46:6-10); and (3) "a node" (*Id.* at 46:24-29) along with the other accompanying elements. In turn, each element

making up the optical processing system is further defined within the claim. For example, the "input interface" comprises, among other things, "at least a first wavelength division demultiplexer." *Id.* at 46:5-6. Thus, the preamble is not limiting because the "claim body describes a structurally complete invention." *Catalina*, 289 F.3d at 809.

Defendant has not provided compelling evidence that Plaintiff relied on the preamble "during prosecution to distinguish the claimed invention from the prior art." *Id.* at 808. Moreover, the preamble phrases do not provide relevant antecedent bases for any claim elements nor are they necessary for understanding the limitations of the claims. Relying on these "guideposts," (*Catalina*, 289 F.3d at 808) the Court finds these preamble terms are not limiting and do not require construction.

Term	**Plaintiff's Proposed Construction**	**Defendant's Proposed Construction**
input interface [‘704, cl. 4; **‘836, cl.** 1, 9, 15**]**	An input to the switching element that may include optical and/or electrical components.	An input to the switching element that processes each optical packet by reading the packet's header information while keeping the payload in the optical domain.

The parties agree that the input interface is "an input to the switching element." The parties disagree whether the claimed input interface should be limited to a particular data type (*i.e.* packets). PL.'S BR. at 10-12; DEF.'S RESP. at 19. The parties further dispute whether the term is purely structural, thus resisting a construction using functional language. PL.'S BR. at 10-12*;* DEF.'S RESP. at 19-20.

The patents-in-suit are not limited to packet-based switching. *See supra* SECTION B. However, even if the claimed invention was limited to packets, the specification does not support

maintaining the packet payload in the optical domain. The specification implicitly describes embodiments where the packet payload is subject to OEO conversions. *See* '704 Patent at 26:35-40 (stating that "[i]n most cases" the packet payload will remain in the optical domain, thus allowing for cases where the payload will be subject to OEO conversion); *see Globetrotter Software, Inc.*, 362 F.3d at 1381 (a claim should not be construed to exclude a preferred embodiment).

Additionally, the relevant claims are written using structural language. "[I]t is generally improper to interpret [structural claims] as having functional requirements," unless the function is a necessary limitation of the claim term. *Schwing GmbH v. Putzmeister Aktiengesellschaft*, 305 F.3d 1318, 1324 (Fed. Cir. 2002) (citing *Toro Co. v. White Consol. Indus., Inc.*, 266 F.3d 1367, 1371 (Fed. Cir. 2001)). Neither the specification nor the claims disclose the processing of optical packets as a necessary limitation of the input interface. While the specification describes a particular embodiment of the input interface in functional terms ('704 Patent at 27:11-28:57), reading that embodiment into the claim language would be improper. *Phillips*, 415 F.3d at 1323.

The input interface can include optical and/or electrical components. *See* '704 Patent at 25:21-22 ("[i]nput interface 1706 can comprise any optical and/or electrical components); *Id.* at 27:31-32 ("[r]eceiver 1804, [a component of the input interface], can comprise any optical and/or electrical component); *Id.* at 27:47-48 (same). However, Plaintiff's permissive construction, to the extent that the input interface "*may* include optical and/or electrical" (emphasis added) components, would render the term meaningless. The input interface must include either optical components or optical and electrical components.

As such, the Court construes the term as "an input to the switching element that includes optical or optical and electrical components."

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
wavelength division demultiplexer [‘704, cl. 4, 7, 8**]**	A device for separating light into different wavelengths.	A component that separates a multiple wavelength optical signal into one or more optical signals.

The parties agreed to the construction of this term at the September 9, 2010 claim construction hearing and the Court adopts the agreed construction, "a component that separates one or more multiple wavelength optical signals into one or more optical wavelengths."

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
light sources [‘704, cl. 4; **‘836, cl.** 1, 15**]**	An optical element that emits light.	Sources of light that generate an optical signal.

The parties agreed at the September 9, 2010 claim construction hearing that this term does not require construction and the Court agrees.

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
coupled to [‘704, cl. 4; **‘836, cl.** 1, 6, 9, 15, 20**]**	Any direct or indirect communication between two or more elements, whether or not those elements are physically connected to one another.	Directly or indirectly communicating with

The parties agreed to the construction of this term at the September 9, 2010 claim construction hearing and the Court adopts the agreed construction, "any direct or indirect communication between two or more elements, whether or not those elements are physically

connected to one another."

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
switching element [‘704, cl. 4, 7; **‘836, cl.** 1, 6, 9, 13-15, 20**]**	The switching element is defined in the claims as comprising certain elements. It may include one or more core routers, edge routers, and management nodes and may include optical and/or electrical components.	A switching component that determines the direction of a packet by reading its header while the payload remains in the optical domain.

Plaintiff contends that the term is sufficiently defined in the claims. *Id.* Defendant contends that the term needs to be construed to aid the jury and disagrees with the particular elements Plaintiff includes in its construction. Moreover, Defendant proposes a construction limited to packet-switching and which requires the packet payload to remain in the optical domain. DEF.'S RESP. at 16-17. Plaintiff disagrees that the switching element is limited to packet-switching. PL.'S BR. at 16. Plaintiff also argues that Defendant's construction improperly imports functional limitations into a structural claim. *Id.* at 17; PL.'S REPLY at 5. Defendant counters that the term "switch" is not solely structural language, but has a functional aspect as well. DEF.'S RESP. at 17. The parties also dispute whether the switching element may contain an edge router. DEF.'S RESP. at 15; PL.'S REPLY at 6.

Defendant's construction is incorrect because it limits the switching element to a packet-based environment. *See supra* SECTION B. Even if Defendant were correct that the invention is limited to a packet-based environment, Defendant's proposed construction would be improper for requiring the packet payload to remain in the optical domain. *See* ‘704 Patent at 26:35-40 (stating

that "[i]n most cases" the packet payload will remain in the optical domain, thus allowing for cases where the payload will be subject to OEO conversion).

Plaintiff is correct that the switching element is defined within the claims. Claim 4 of the '704 Patent, which is exemplary for the purposes of resolving this dispute, recites in relevant part:

> a switching element coupled to the input interface, wherein the switching element comprises:
>
> an optical signal separator operable to separate the multiple wavelength optical signal into one or more optical signal wavelengths;
>
> a plurality of semiconductor devices located on a single semiconductor substrate, the plurality of semiconductor devices capable of performing an optical switching operation on at least one of the optical signal wavelengths; and
>
> a controller operable to generate a control signal that affects the optical switching operation performed by one or more of the plurality of semiconductor devices; and

Id. at 46:10-23. In other words, a switching element in Claim 4 includes, at a minimum, "an optical separator" (*Id.* at 46:12), "a plurality of semiconductor devices" (*Id.* at 46:15); and "a controller" (*Id.* at 46:20). Similarly, Claims 9 and 15 of the '836 patent define the switching element within the claim. *See* '836 patent at 45:16-42; 46:1-43. No further construction is necessary for this term beyond what is explicitly disclosed in the claims.

Plaintiff's construction is incorrect to the extent it includes elements that do not correspond to the claim language. Moreover, Plaintiff's additional language that the switching element "may include "optical and/or electrical components," adds nothing. The switching element must include either optical components or optical and electrical components. *Id.* at 25:44-49.

As such, the Court finds that this term is defined in the claims and no construction is

necessary.

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
the one or more optical signal wavelengths [‘704, cl. 4**]** **the optical signal wavelengths [‘836, cl.** 1, 9, 15**]**	Signal wavelengths corresponding to the signal wavelengths output from the optical signal separator.	The one or more optical signal wavelengths that are outputted from the optical signal separator. The optical signal wavelengths that are outputted from the optical signal separator.

The parties disagree whether the construction of these terms should include "signal wavelengths" or "optical signal wavelengths," however, they do agree that the signal wavelengths are output from the optical signal separator. PL.'S BR. at 18; DEF.'S RESP. at 23. Plaintiff contends that the patent does not require that the wavelengths received at the node must be identical to the wavelengths output from the optical signal separator. PL.'S BR. at 20. Defendant counters that a plain reading of the claims requires the same signals that are output from the separator be received by the node. DEF.'S RESP. at 23-24.

Defendant's constructions are correct. The Federal Circuit has provided numerous "examples in which the use of a term within the claim provides a firm basis for construing the term." *Phillips*, 415 F.3d at 1314 (citing *Mars, Inc. v. H.J. Heinz Co.*, 377 F,3d 1369, 1374 (Fed. Cir. 2004); *Process Control Corp. v.HydReclaim Corp.*, 190 F.3d 1350, 1356 (Fed. Cir. 1999)). Claim 4 of the ‘704 Patent, which is exemplary for the purposes of resolving this dispute, recites, with relevant portions highlighted:

> An optical processing system comprising:

> an input interface comprising at least a first wavelength division demultiplexer and one or more light sources coupled to the first wavelength division demultiplexer and capable of generating a multiple wavelength optical signal;
>
> a switching element coupled to the input interface, wherein the switching element comprises: an optical signal separator operable to separate the multiple wavelength optical signal into **one or more optical signal wavelengths**; a plurality of semiconductor devices located on a single semiconductor substrate, the plurality of semiconductor devices capable of performing an optical switching operation on at least one of the optical signal wavelengths; and a controller operable to generate a control signal that affects the optical switching operation performed by one or more of the plurality of semiconductor devices; and
>
> a node coupled to at least a portion of the switching element, wherein the node comprises a second wavelength division demultiplexer and a receiver coupled to the second wavelength division demultiplexer that is capable of detecting at least a portion of **the one or more optical signal wavelengths.**

'704 Patent at 46:4-30.

The claim language demonstrates that both "the optical signal wavelengths" and "the one or more optical signal wavelengths" are referring back to earlier claimed "one or more optical signal wavelengths." This conclusion "avoids any lack of antecedent basis problem for the occurrence of [the optical signal wavelengths or the one or more optical signal wavelengths]." *Process Control Corp.*, 190 F.3d at 1356-57.

Plaintiff contends that it is contrary to the '704's teachings to require that the wavelengths received by the node be identical to the wavelengths output from the optical signal separator. PL.'S BR. at 20. Specifically, Plaintiff asserts that Figure 30 embodies an output interface capable of wavelength "regeneration" and "conversion," which would improperly be excluded by Defendant's proposed construction. PL.'S BR. at 18-20. "A claim interpretation that excludes a preferred

embodiment from the scope of the claim is rarely, if ever correct." *Globetrotter Software*, 362 F.3d at 1381. However, reliance on an embodiment not covered by the plain language of the claim to broaden the construction of a term is improper. *Honeywell Intern., Inc. v. Acer America Corp.*, 2009 WL 68896 at *12 (E.D. Tex. 2009) (citing *Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1325 (Fed. Cir. 2001)).

Plaintiff is correct that the embodiment of the output interface represented by Figure 30 allows for wavelength regeneration or conversion. '704 at 42:17-51. The output interface explicitly contains a "regeneration module," capable of "regeneration and/or wavelength conversion." *Id.* at 42:36-38. While Claim 4 may claim regeneration of the optical signal on the same wavelength, it does not claim the embodiment disclosing wavelength conversion. As explained above, a plain reading of the claim language requires a node "capable of detecting at least a portion of the one or more optical signal wavelengths." *Id.* at 46:24-30. "[T]he one or more optical signal wavelengths" received by the node necessarily refers back to the "one or more optical signal wavelengths" separated by the optical signal separator. *Id.* at 46:12-14. The claim language requires that the signal and the wavelength remain identical, despite the disclosure of an unclaimed embodiment in the specification.[5]

Thus, the Court construes these terms respectively as, "the one or more optical signal wavelengths that are outputted from the optical signal separator" and "the optical signal wavelengths that are outputted from the optical signal separator."

[5] The same holds true for other unclaimed embodiments described in the specification regarding signal regeneration and conversion. For example, Figure 22A ('704 at 31:46-47) is an embodiment of an "all-optical XOR gate" which allows for data signals to "comprise a different wavelength" than the originally received data signal. *Id.* at 32:25-35.

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
optical switching operation [‘704, cl. 4 **‘836, cl.** 1, 15**]** **switching optically [‘836, cl.** 9**]**	One of any number of switching operations, such as add, drop, amplify, attenuate, phase shift, gain, equalize, etc. performed optically.	An operation that optically diverts the movement of each optical packet based on its header information. Optically diverting the movement of each optical packet based on its header information.

Defendant contends that the terms should be limited to a packet-based environment and that optical switching includes the concept of diverting packets based on their header information. DEF.'S RESP. at 24-25. Plaintiff disagrees. PL.'S BR. at 21, PL.'S REPLY at 7-8. Plaintiff contends that the patent describes various switching operations that may be performed optically. PL.'S BR. at 21. Defendant disagrees and counters that the identified operations are types of signal processing, not optical switching. DEF.'S RESP. at 25.

Defendant's construction again attempts to limit the optical switching operations to packet-switching. As explained earlier, the patent is not limited to such an environment. *See supra* SECTION B.

The specification describes "signal processing" to include "attenuation, switching, phase shifting, or any other manipulation of one or more optical signals." ‘704 at 4:32-34; *see also* 18:46-54. Plaintiff's construction improperly broadens "switching," a subset of "signal processing," to include the entire set. While Plaintiff's construction is too expansive, the specification does describe "add" and "drop" as switching operations. Specifically, the specification describes a particular embodiment of the core router node, a component of the switching element (*Id.* at 34:40), which is

capable of adding and/or dropping optical signals. *Id.* at 36:35-40; 36:56-37:2; 38:30-36. As such, optical switching operations may include adding and dropping optical signals.

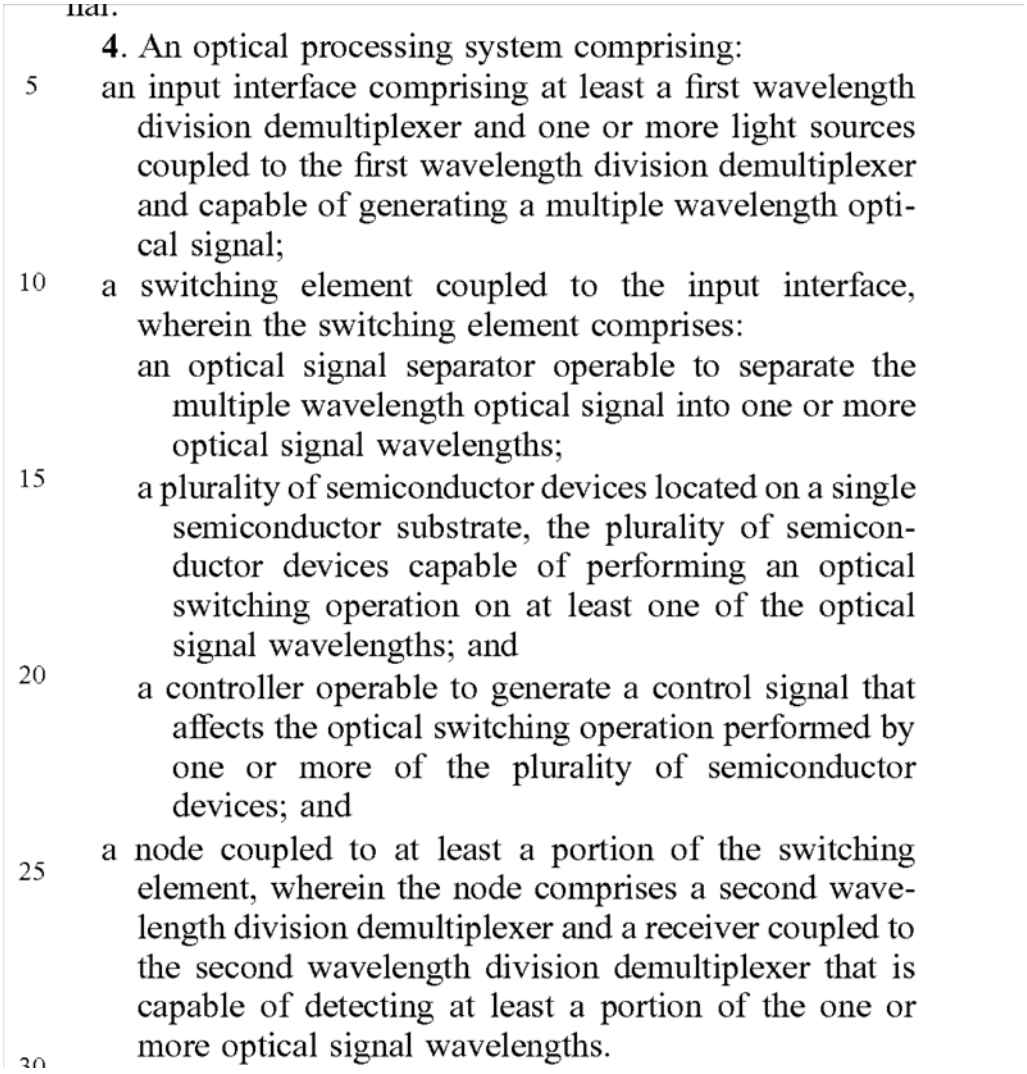
Lastly, the specification describes the switching element communicating, via the core router nodes, optical signals to a "desired destination." *Id.* at 34:40-43. While the specification does not support limiting the switching element to "diverting packets," it does support communicating the optical signals to a destination. As such, the Court construes these terms as, "an optical operation that communicates optical signal wavelengths to a desired destination."

Term	**Plaintiff's Proposed Construction**	**Defendant's Proposed Construction**
node **['704, cl.** 4**]**	Connection point.	A component within a switching element.

Defendant contends that the specification and the prosecution history demonstrate that a node is only found within the switching element. DEF.'S RESP. at 12-14. Specifically, Defendant argues that the only "nodes" described in the specification are "core router nodes, management nodes and access nodes," all of which are located within the switching element. *Id.* at 13. Defendant further contends that during prosecution of the '704 patent, the patentee identified the core router nodes within the switching element as the node containing both a receiver and demultiplexer. *Id.* at 13-14. Plaintiff counters that during prosecution, the patentee merely described the core router node as one example of a node. PL.'S REPLY at 8-9. Plaintiff also contends that the format of the claim demonstrates that a node need not be within the switching element. PL.'S BR. at 22. Plaintiff further argues that the specification uses the word node generically. *Id.*

Plaintiff is correct that it is not mandatory that the disclosed node be within the switching

element. The syntax of the claim language demonstrates that a node can be distinct from the switching element. Claim 4 of the '704 Patent, which is exemplary for the purposes of resolving this dispute, is presented in the following format:



4. An optical processing system comprising:

an input interface comprising at least a first wavelength division demultiplexer and one or more light sources coupled to the first wavelength division demultiplexer and capable of generating a multiple wavelength optical signal;

a switching element coupled to the input interface, wherein the switching element comprises:

an optical signal separator operable to separate the multiple wavelength optical signal into one or more optical signal wavelengths;

a plurality of semiconductor devices located on a single semiconductor substrate, the plurality of semiconductor devices capable of performing an optical switching operation on at least one of the optical signal wavelengths; and

a controller operable to generate a control signal that affects the optical switching operation performed by one or more of the plurality of semiconductor devices; and

a node coupled to at least a portion of the switching element, wherein the node comprises a second wavelength division demultiplexer and a receiver coupled to the second wavelength division demultiplexer that is capable of detecting at least a portion of the one or more optical signal wavelengths.

'704 Patent at 46:4-30.

As demonstrated by the syntax of Claim 4, a switching element "comprises:" "an optical signal separator," "a plurality of semiconductor devices" and "a controller." The "node" is set out

and claimed separately in the last independent clause. While the previous claimed elements are required components of the switching element, the node is not. Accordingly, Defendant's construction does not comport with the plain language of the claims.

Further, contrary to Defendant's contention, the prosecution history does not support limiting the location of all nodes within the switching element. In response to the patent examiner's request to identify the location of a node containing both a receiver and demultiplexer, the patentee merely provided an example of a node within the switching element. *See* DEF.'S EXHIBIT K at 8. The patentee did not state that all nodes reside within the switching element. Moreover, the patent specification uses the word node generically. *See* '704 at 34:62-63; 36:19; 37:31; 43:23; Figs. 23, 24, 25, 31.

Therefore, Plaintiff's construction is proper.[6] The Court construes this term as a "connection point."

Term	**Plaintiff's Proposed Construction**	**Defendant's Proposed Construction**
the multiple wavelength optical signal [' 704, cl. 4, 7, 8 **' 836, cl.** 1, 15**]**	An optical signal corresponding to the multiple wavelength optical signal emitted by the one or more light sources.	The multiple wavelength optical signal that is generated by the one or more light sources.

The same reasoning applies to this phrase as the phrases "the one or more optical signal wavelengths" and "the optical signal wavelengths." Claim 4 of the '704 Patent, which is exemplary for the purposes of resolving this dispute, recites, with relevant portions highlighted:

[6] Defendant contends that the Plaintiff's dictionary definition is improper because the dictionary cited was not published in 2003 (date of filing) and is unrelated to optical networks. DEF. RESP. at 13, fn 16. Defendant has not provided evidence that a contrary dictionary definition is proper or that the term's meaning has changed over time or is used differently when used in optical networks versus general computer networks.

> An optical processing system comprising:
>
> an input interface comprising at least a first wavelength division demultiplexer and **one or more light sources** coupled to the first wavelength division demultiplexer and capable of generating **a multiple wavelength optical signal**;
>
> a switching element coupled to the input interface, wherein the switching element comprises: an optical signal separator operable to separate **the multiple wavelength optical signal** into one or more optical signal wavelengths; a plurality of semiconductor devices located on a single semiconductor substrate, the plurality of semiconductor devices capable of performing an optical switching operation on at least one of the optical signal wavelengths; and a controller operable to generate a control signal that affects the optical switching operation performed by one or more of the plurality of semiconductor devices; and
>
> a node coupled to at least a portion of the switching element, wherein the node comprises a second wavelength division demultiplexer and a receiver coupled to the second wavelength division demultiplexer that is capable of detecting at least a portion of the one or more optical signal wavelengths.

'704 Patent at 46:4-30.

The claim language is clear that "the multiple wavelength optical signal" is referring back to the "multiple wavelength optical signal" which is generated from the "one or more light sources coupled to the first wavelength division demultiplexer." This conclusion "avoids any lack of antecedent basis problem for the occurrence of" (*Process Control Corp.*, 190 F.3d at 1356-57) the multiple wavelength optical signal.

For the foregoing reasons, the Court construes this phrase as, "the multiple wavelength optical signal that is generated by one or more light sources."

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
output interfaces **[‘836, cl.** 1, 9, 15**]**	An output from the switching element that may include optical and/or electrical components.	Components that direct an optical output signal from the switching element.

The parties agreed to the construction of this term at the September 9, 2010 claim construction hearing and the Court adopts the agreed construction, "components that receive an optical output signal from the switching element."

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
the switching element optical output signal **[‘836, cl.** 1, 6-7, 9, 13-15, 20**]**	The signal that is output by the switching element.	The optical output signal generated by the switching element (for claims 1 and 15 of the ‘836 patent and their dependent claims). The optical output signal communicated by the switching element (for claim 9 of the ‘836 patent and its dependent claims).

The parties agreed to the construction of this term at the September 9, 2010 claim construction hearing and the Court adopts the agreed construction, "the signal that is output by the switching element."

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
synchronized light source [‘836, cl. 1, 9, 15**]**	Synchronized light source is defined in the claims.	A light source that generates a pulsed or modulated, i.e., of varying intensity, output signal that is synchronized to an input signal.

The parties disagree whether this term requires construction. Plaintiff contends that the operation of the "synchronized light source" is defined within the claims and thus requires no further construction. PL.'S BR. at 26. Defendant contends that the term requires construction. DEF.'S RESP. at 27. Defendant further argues that the patentee acted as his own lexicographer and defined the "synchronized light source" in the specification. *Id.* Plaintiff counters that Defendant's proposed definition is inconsistent with the specification. PL.'S BR. at 26.

Defendant is correct that the patentee acted as his own lexicographer regarding the "synchronized light source." Specifically, the patentee stated:

> [t]he phrase "synchronized light source" a (sic) used herein refers to a light source that provides a pulsed and/or modulated output signal that is capable of being synchronized to an incoming data stream using a phase locked loop.

‘704 Patent at 32:20-24. The patentee's lexicography should control. *Phillips*, 415 F.3d at 1316. Nonetheless, during the claim construction hearing, the parties agreed that the last clause of the patentee's definition, "using a phase locked loop," was both unnecessary and may lead to jury confusion. The Court agrees.

As such, the Court construes this term as, "a light source that provides a pulsed and/or modulated output signal that is capable of being synchronized to an incoming data stream."

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
star configuration [‘704, cl. 7, 8 **‘836, cl.** 1, 6, 9, 13, 15, 20**]**	A network configuration in which a single node connects to three or more other nodes.	A configuration in which a node can communicate with any other node through a central node.

The parties agreed to the construction of this term at the September 9, 2010 claim construction hearing and the Court adopts the agreed construction, "a configuration in which endpoints or nodes connect to a common central point."

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
optical amplifier [‘704, cl. 8 **‘836, cl.** 6, 13, 20**]**	AGREED: device which amplifies an optical signal	AGREED: device which amplifies an optical signal

The parties agreed to the construction of this term prior to the claim construction hearing and the Court adopts the agreed construction, "a device which amplifies an optical signal."

Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
micro-mirror device [‘836, cl. 4, 11, 18**]**	A semi-conductor device that contains micro-mirrors.	A semiconductor device that uses a moveable microscopic mirror.

The parties agreed to the construction of this term at the September 9, 2010 claim construction hearing and the Court adopts the agreed construction, "a semiconductor device that contains micro-mirrors."

CONCLUSION

For the foregoing reasons, the Court adopts the constructions set forth above. For the ease of reference, the Court's claim interpretations are set forth in a table attached to this Order.

So ORDERED and SIGNED this 9th day of November, 2010.

JOHN D. LOVE
UNITED STATES MAGISTRATE JUDGE

CLAIM CHART

TERM(S)	COURT'S CONSTRUCTION
optical processing system **[‘704, cl.** 4, 7, 8 **‘836, cl.** 1, 4-8, 15-16, 18-20**]** **A method of processing optical signals** **[‘836, cl.** 9**]**	The Court finds these preamble terms are not limiting and do not require construction.
input interface **[‘704, cl.** 4; **‘836, cl.** 1, 9, 15**]**	an input to the switching element that includes optical or optical and electrical components.
wavelength division demultiplexer **[‘704, cl.** 4, 7, 8**]**	a component that separates one or more multiple wavelength optical signals into one or more optical wavelengths.
light sources **[‘704, cl.** 4; **‘836, cl.** 1, 15**]**	This term does not require construction
coupled to **[‘704, cl.** 4; **‘836, cl.** 1, 6, 9, 15, 20**]**	any direct or indirect communication between two or more elements, whether or not those elements are physically connected to one another.
switching element **[‘704, cl.** 4, 7; **‘836, cl.** 1, 6, 9, 13-15, 20**]**	This term is defined in the claims and no construction is necessary.
the one or more optical signal wavelengths **[‘704, cl.** 4**]** **the optical signal wavelengths** **[‘836, cl.** 1, 9, 15**]**	the one or more optical signal wavelengths that are outputted from the optical signal separator the optical signal wavelengths that are outputted from the optical signal separator.
optical switching operation **[‘704, cl.** 4 **‘836, cl.** 1, 15**]** **switching optically** **[‘836, cl.** 9**]**	an optical operation that communicates optical signal wavelengths to a desired destination.

node **[‘704, cl.** 4**]**	connection point.
the multiple wavelength optical signal **[‘704, cl.** 4, 7, 8 **‘836, cl.** 1, 15**]**	the multiple wavelength optical signal that is generated by one or more light sources.
output interfaces **[‘836, cl.** 1, 9, 15**]**	components that receive an optical output signal from the switching element.
the switching element optical output signal **[‘836, cl.** 1, 6-7, 9, 13-15, 20**]**	the signal that is output by the switching element.
synchronized light source **[‘836, cl.** 1, 9, 15**]**	a light source that provides a pulsed and/or modulated output signal that is capable of being synchronized to an incoming data stream.
star configuration **[‘704, cl.** 7, 8 **‘836, cl.** 1, 6, 9, 13, 15, 20**]**	a configuration in which endpoints or nodes connect to a common central point.
optical amplifier **[‘704, cl.** 8 **‘836, cl.** 6, 13, 20**]**	a device which amplifies an optical signal.
micro-mirror device **[‘836, cl.** 4, 11, 18**]**	a semiconductor device that contains micro-mirrors.